

## **ABSTRACT**

Sleep apnea is a common form of sleep disordered breathing (SDB) which is commonly known as snoring during sleep, based on various complex mechanisms and predisposing factors. Sleep apnea is also related to various medical problems and has an impact on morbidity and mortality so that it becomes a burden on public health services, so that its detection needs to be done correctly, one of which is through electrocardiogram signals that can detect sleep apnea more easily and precisely.

This final project is carried out to detect Sleep Apnea disease based on electrocardiogram signals using multi-scale entropy analysis. Multi-scale entropy is a new method for measuring the complexity of a finite length of time series, which can be applied to both physical and physiological data sets, and can be used for the detection of Sleep Apnea on electrocardiogram signals.

The results of this final project is a system model that can detect sleep using the multi-scale entropy method. The tests were performed on two classes of ECG data, normal ECG signals and apnea ECG signals. In this final project, classification and verification is carried out using the Support Vector Machine (SVM) method. From the experimental results through 10-fold cross validation, the experimental results show the highest accuracy is 85.6%.

**Keywords:** Sleep Apnea, Electrocardiogram, Multi Scale Entropy, SVM.